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Contractual Correspondence

27 June 1967
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Technical Proposal
for

HUMAN FACTORS SUPPORT SERVICES
(P. R. NO. 2-4427-1-550)

Prepared for:



NGA Review Complete

Approved 18 July 67
[Signature]

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[Redacted]

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Prepared by

[Redacted]

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1. INTRODUCTION

[] will provide the [] personnel and materials to accomplish three specific tasks, Performance Measures, Stereo Evaluation and Factors Study, and Mensuration as defined within the following work statement.

1.1 Task 1 - Performance Measures

The conduct of the Performance Measures Task requires that imagery test material be obtained, rated, assembled into test packages and evaluated by means of tests. [] will provide the following services in support of this work.

A) Imagery Sorting and Rating

To monitor and record the sorting and rating of 560 photographic items (which were previously selected) by sponsor supervisory and/or lead personnel.

Time Period: Weeks 10 (July 17) and 11

B) Annotation, Targets of no Interest

To assist and monitor sponsor interpreters in the annotation of "targets of no interest" (to the tests) on the film. About 310 photographic chips are involved.

Time Period: Week 12

C) Locate and Annotate Targets

To assist [] personnel with the assembly of the first version of the tests and to monitor the review of these materials by sponsor supervisory and/or lead personnel.

Time Period: Weeks 14 and 15

D) Refined Test Version

To assist [] personnel in the assembly of a second refined version of the tests for administration to sponsor personnel and to assist in the set up of test facilities aids in a room provided by the sponsor.

Time Period: Week 18

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E) Training and Test Administration

To be trained and assist in the administration of the tests to two groups of approximately four (4) individual sponsor interpreters each during pilot testing.

Time Period: Weeks 20, 21 and 22

F) Administer Tests

To administer and aid in the administration of both performance tests to the Sponsor's personnel in small groups (no more than 4 at one time).

Time Periods: Weeks 24 - 27 and Weeks 29 - 32

1.2 Task 2 - Stereo Evaluation Study

This study is aimed at the circumstances under which stereo imagery is of value to the interpreter. It will use the imagery currently being selected by []

A) Group Photos for Experiments

Working in collaboration with [] personnel, [] will help in the assignment of photos to experimental groupings for the stereo evaluation study in order to achieve properly balanced conditions, e.g., photos of equal difficulty in each treatment group. They also will provide aid in setting up the experimental test station for stereo evaluation in the search task.

Time Period: Weeks 10 - 13

B) Conduct Experiment

During the data taking phase, [] will provide assistance in: (1) the preparation of imagery for viewing; (2) keeping records; and (3) monitoring of experimental subjects.

Time Period: Weeks 17 - 23

C) Evaluate Interpreter Reports

The experimental methodology calls for reports by the interpreter subjects which are typical of those produced in the search operation. The scoring of these reports for quality on a simple rating scale is expected to enhance the sensitivity of the response measures as indicators of performance quality.

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These ratings must be done by a highly qualified interpreter. [] will provide an independent evaluation of interpreter performance at this level. Furthermore, the one who has served as technical assistant in the data taking phase might advantageously serve in this role also, assuming that he can maintain objectivity in his ratings. The question of objective ratings may be answered by having one or more additional experienced raters make independent judgments of the quality of the interpreter reports.

Time Period: Weeks 20 and 24 - 27

Stereo Factors Study

The second study in stereo utility is an investigation in search of factors underlying the value of stereo in the search task. The kinds of questions to which the second study is directed are: (1) What imagery characteristics or content lead the interpreter to his decision to use stereo? (2) How is the two-dimensional information (obtainable without stereo) combined with the three-dimensional information (from stereo viewing) to make a decision about target identification? (3) What types of targets are most easily identified with stereo? (4) How is preference for stereo use affected by prolonged inspection with it?

D) Interpreter Response Evaluation

An experienced interpreter from [] will assist in eliciting insightful response from the Sponsor's personnel and evaluating these responses as part of the data taking phase of this investigation.

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Time Period: Weeks 29 - 32

1.3 Task 3 - Mensuration

[] will participate in an experimental investigation designed to assess the extent to which repeatable measurements can be made as a function of different personnel and equipment. The results of this investigation will include the overall distribution of nonsystematic (relative) errors, and the extent to which these errors are attributable to between-equipment, between-operator, and within-operator nonrepeatability.

The overall program will be a joint effort between [] and the [] in which [] will select and obtain the imagery to be used, provide information necessary for designing the experiment, and conduct the actual experiment (including providing the subjects and equipment). The [] will design the detailed experiment, provide guidance in conducting the experiment, analyze the data, and document the results.

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A) Imagery Preparation

Approximately 25 images will be required. Each image will contain a preselected target on which mensuration is to be performed. Both the targets and the imagery will be representative of the Sponsor's quality imagery. If possible, unclassified imagery will be used. Ground truth will not be required.

Time Periods: Weeks 10 & 11 and Weeks 16 - 19

B) Experiment Design, Information

The experiment design will require selection of the subjects, equipment, work procedures, and detailed procedures for collecting and controlling the data. The subjects should be representative of the Sponsor's experienced mensuration personnel. Information is required from [REDACTED] on: (1) selection of the mensuration equipment to be used based on the equipment available at [REDACTED] and the anticipated equipment usage at the Sponsor's facility; and (2) the work procedures to be used by the subjects in making the test measurements based on those currently in use by the Sponsor.

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Time Period: Weeks 15 & 20

C) Data Collection

Approximately one month will be required to complete the data collection phase of the experiment. All data will be collected using [REDACTED] facilities, equipment and personnel. A two-man level of effort will be required of [REDACTED] involving a one-man level of effort for subjects and a one-man level of effort for a test director (in addition, [REDACTED] will provide a test consultant during the early phase of the experiment).

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Approximately 15 subjects will be required. Each subject will be tested for approximately 4 hours. The 4 hours of testing per subject will involve repeated measurements on from 3 to 5 different instruments. Approximately 10 pointings (5 on each of two edges) will be made on 5 different targets on each of the instruments included in the investigation. The tentative experiment is graphically presented in Figure 1.

Time Period: Weeks 21 - 24

D) Analysis

The data will be collected by [REDACTED] in a format suitable for keypunching onto IBM cards. [REDACTED] will statistically analyze the data.

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Time Period: Week 25

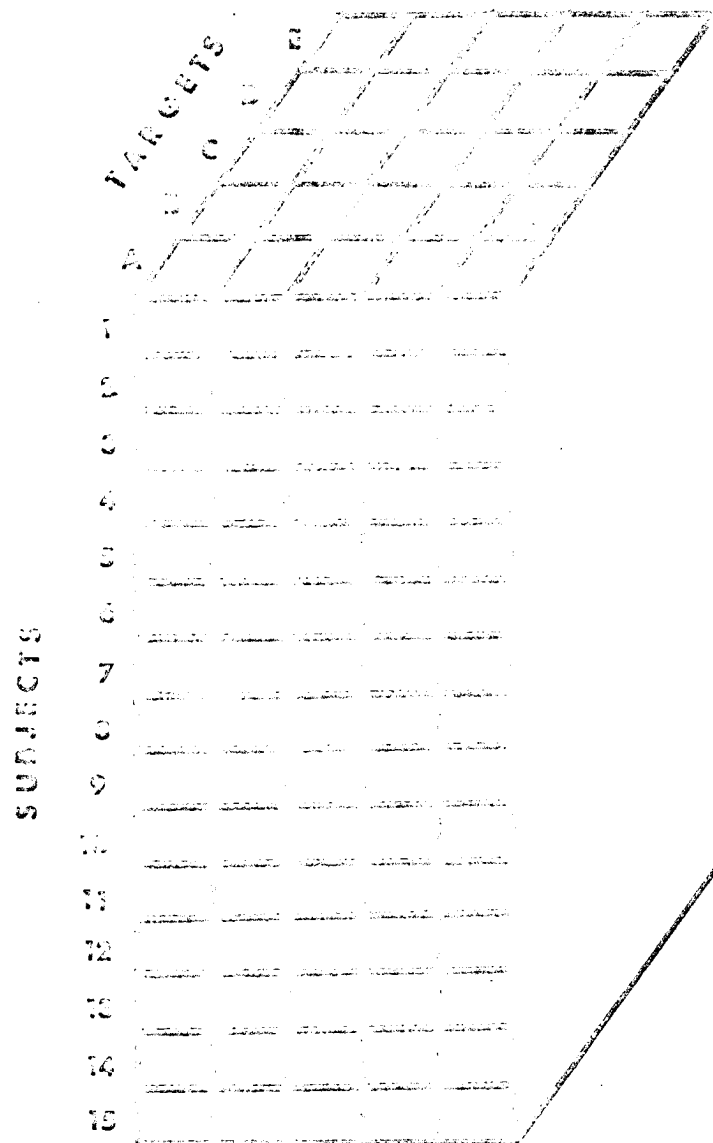
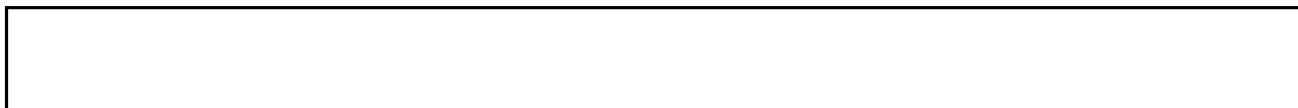


FIGURE 1. MEASUREMENT-EXPERIMENTAL DESIGN

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2. TASK SCHEDULE

The proposed program duration is approximately six months. A schedule illustrating the level of effort, in man weeks, for each sub-task item for the program's duration is included in Figure 2.

[] will prepare a preliminary draft of the final report, which will be reviewed by [] for technical accuracy. [] will prepare the final draft. Time Period: Week 36

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Monthly progress reports and cost statements will be submitted to [] by the first of each month. Resumes of the primary personnel assigned to the contract are included in the Statements of Qualifications.

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MAY			JUN			JUL			AUG			SEPT			OCT			NOV			DEC			JAN											
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

TASK 1. Performance Measures

- A) Imagery Sorting & Rating
- B) Annotation, Targets of no Interest
- C) Locate & Annotate Targets
- D) Refined Test Version
- E) Training & Test Administration

TASK 2. Stereo Evaluation Study

- A) Group Photos for Experiments
- B) Conduct Experiment
- C) Evaluate Interpreter Reports
- D) Interpreter Response Evaluation

TASK 3. Manpower

- A) Imagery Prep.
- B) Experiment Design Information
- C) Data Collection
- D) Analysis

Documentation
Monthly Report

TOTAL MAN WEEKS BY MONTH

6	7	12	12.5	7.5	6	1	Total 50
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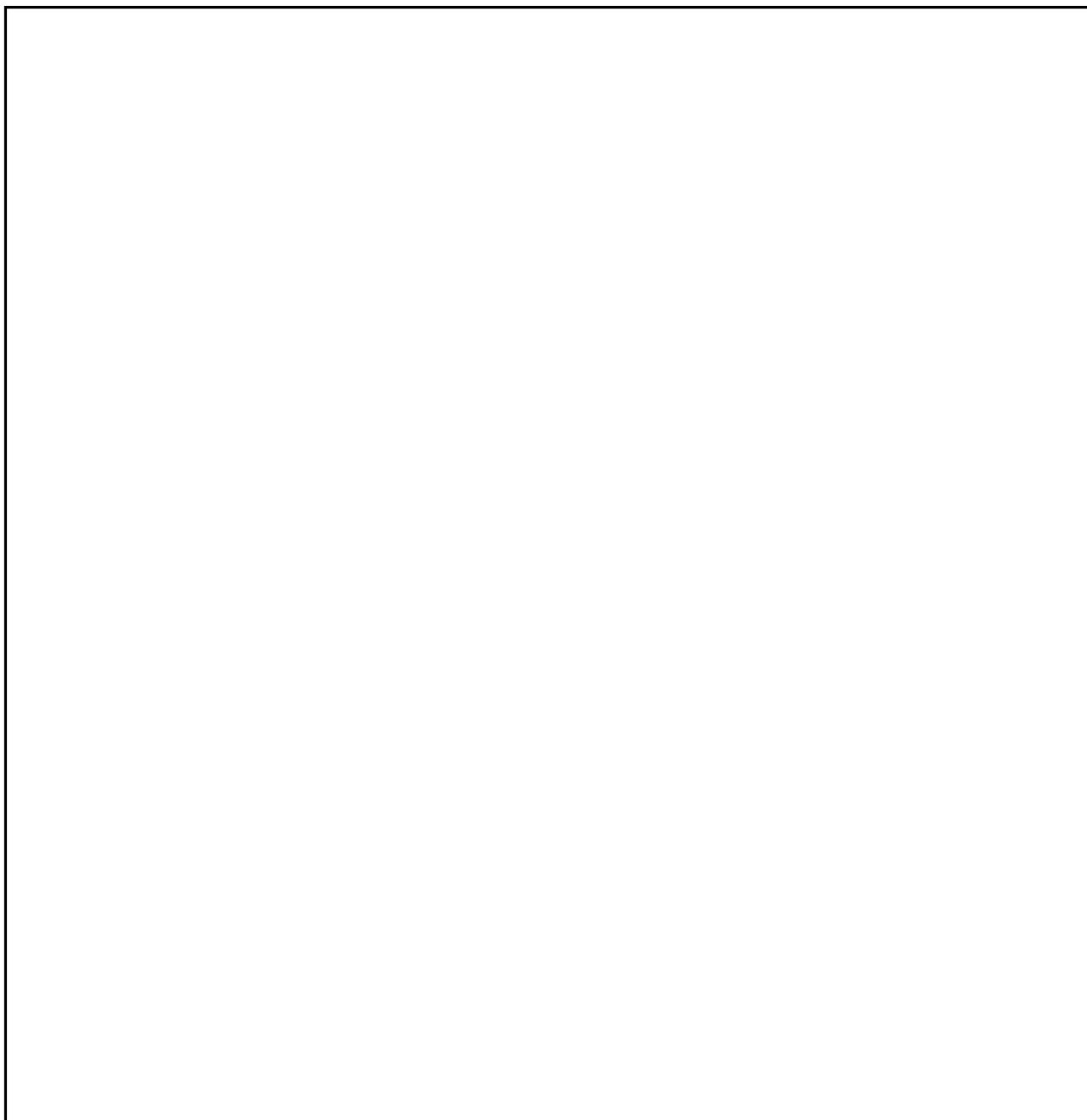
FIGURE 2

TASK SCHEDULE

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STATEMENTS OF QUALIFICATIONS

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STATEMENTS OF QUALIFICATIONS

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STATEMENTS OF QUALIFICATIONS

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